

**What is claimed is:**

1. A front-end system for receiving a first signal and a second signal  
2 via an antenna, comprising:  
a cooled vessel;  
4 a manifold disposed in the cooled vessel and coupled to the antenna;  
a first filter coupled to the manifold, disposed in the cooled vessel, and  
6 configured to pass the first signal; and  
a second filter coupled to the manifold, disposed in the cooled vessel,  
8 and configured to pass the second signal;  
wherein the cooled vessel comprises a first output and a second output  
10 for the first signal and the second signal, respectively.
2. The front-end system of claim 1 wherein the cooled vessel  
2 comprises a cryostat.
3. The front-end system of claim 1 wherein the first filter and the  
2 second filter comprise a high-temperature superconducting material.
4. The front-end system of claim 1 wherein the manifold comprises a  
2 first transmission line and a second transmission line having respective  
lengths such that the first filter is isolated from the second signal and the  
4 second filter is isolated from the first signal.

5. The front-end system of claim 1 wherein:

- 2 the first signal is associated with a first channel and the second signal is associated with a second channel; and
- 4 the first channel and the second channel differ in at least one of center frequency and bandwidth.

6. The front-end system of claim 1 wherein:

- 2 the first signal is associated with a first channel and the second signal is associated with a second channel; and
- 4 the first channel and the second channel have differing data requirements.

7. The front-end system of claim 1 wherein the first signal is

- 2 associated with a voice channel and the second signal is associated with a data channel.

8. The front-end system of claim 1 wherein the first signal and the

- 2 second signal are representative of information in accordance with different wireless transmission standards.

9. The front-end system of claim 1 wherein the first signal is  
2 representative of information stored in an analog transmission format and the  
second signal is representative of information stored in a digital transmission  
4 format.

10. The front-end system of claim 1, further comprising a first  
2 low-noise amplifier and a second low-noise amplifier coupled to the first filter  
and the second filter, respectively, wherein the first and second low-noise  
4 amplifiers are disposed in the cooled vessel.

11. The front-end system of claim 1, further comprising a wide-band  
2 filter coupling the manifold to the antenna wherein the wide-band filter is  
disposed in the cooled vessel.

12. The front-end system of claim 11, further comprising a low-noise  
2 amplifier coupling the wide-band filter to the manifold wherein the low-noise  
amplifier is disposed in the cooled vessel.

13. The front-end system of claim 1 further comprising a first cable  
2 and a second cable wherein:  
the first cable couples the first RF filter to the first output of the cooled vessel;  
4 the second cable couples the second RF filter to the second output of the  
cooled vessel; and  
6 the first and second cables comprise a mechanism to reduce heat transfer via  
the first and second outputs.

14. The front-end system of claim 13 wherein the first and second  
2 cables comprise excess length.

15. The front-end system of claim 1 comprising a second manifold.

16. The front-end system of claim 15 wherein the second manifold is  
2 outside the cryostat.

17. The front-end system of claim 15 wherein the second manifold is  
2 inside the cryostat.

18. A front-end system for receiving a first signal and a second signal  
2 via an antenna, comprising:  
a cooled vessel having a first output and a second output;  
4 a wide-band filter configured to pass the first and second signals,  
coupled to the antenna, and disposed in the cooled vessel;  
6 a low-noise amplifier coupled to the wide-band filter;  
a first bandpass filter configured to pass the first signal, coupled to the  
8 low-noise amplifier, disposed in the cooled vessel, and coupled to the first  
output; and  
10 a second bandpass filter configured to pass the second signal, coupled  
to the low-noise amplifier, disposed in the cooled vessel, and coupled to the  
12 second output.

19. The front-end system of claim 18 wherein the cooled vessel  
2 comprises a cryostat.

20. The front-end system of claim 18 wherein the first bandpass filter  
2 and the second bandpass filter comprise a high-temperature superconducting  
material.

21. The front-end system of claim 18 further comprising a manifold  
2 that couples the low-noise amplifier to the first and second bandpass filters.

22. The front-end system of claim 21 wherein the manifold comprises

2 a first transmission line and a second transmission line having respective

lengths such that the first bandpass filter is isolated from the second signal and

4 the second bandpass filter is isolated from the first signal.

23. The front-end system of claim 18 wherein:

2 the first signal is associated with a first channel and the second signal

is associated with a second channel; and

4 the first channel and the second channel differ in at least one of center

frequency and bandwidth.

24. The front-end system of claim 18 wherein:

2 the first signal is associated with a first channel and the second signal

is associated with a second channel; and

4 the first channel and the second channel have differing data

requirements.

25. The front-end system of claim 18 wherein the first signal is

2 associated with a voice channel and the second signal is associated with a data

channel.

26. The front-end system of claim 18 wherein the first signal and the  
2 second signal are representative of information in accordance with different  
wireless transmission standards.

27. The front-end system of claim 18 wherein the first signal is  
2 representative of information stored in an analog transmission format and the  
second signal is representative of information stored in a digital transmission  
4 format.

28. The front-end system of claim 18 further comprising a first cable  
2 and a second cable wherein:  
the first cable couples the first bandpass filter to the first output of the  
4 cooled vessel;  
the second cable couples the second bandpass filter to the second  
6 output of the cooled vessel; and  
the first and second cables comprise a mechanism to reduce heat  
8 transfer via the first and second outputs.

29. The front-end system of claim 28 wherein the first and second  
2 cables comprise excess length.

30. The front-end system of claim 18 comprising a second manifold.

31. The front-end system of claim 30 wherein the second manifold is

2 outside the cryostat.

32. The front-end system of claim 30 wherein the second manifold is

2 inside the cryostat.